C-3-h. Shallow Soil / Lava, Orchard Options Worksheet

1	STATE	Hawaii
2	FIELD OFFICE	Kealakekua
3	MLRA	161
4	COMMON RESOURCE AREA (CRA)	**Shallow Soil/Lava**
5	RESOURCE INTERPRETATIONS	*see Section II FOTG for interpretations*
5.1	SOIL	
5.2	WATER	
5.3	AIR	
5.4	PLANT	
5.5	ANIMAL	
5.6	HUMAN	
6	HYDROLOGIC UNIT	2001000
7	SYSTEM TEMPLATE LABEL	**SSA30**
8	SYSTEM NAME	**Shallow Soil/Lava, Orchard**
9	PLANNING PHASE	Non-Benchmark
10	PLANNING LEVEL	RMS
11	NRCS LANDUSE	CROP
12	PLANNED CONS. PRACTICES	*enter code / name of practice*

1. 322 Channel Vegetation
2. 324 Deep Tillage
3. 331 Contour Orchard and Other Fruit Area
4. 340 Cover Crop
5. 342 Critical Area Planting
6. 350 Sediment Basin
7. 362 Diversion
8. 380 Windbreak/Shelterbelt Establishment
9. 412 Grassed Waterway
10. 430 DD Irrigation Water Conveyance, Pipeline, High-Pressure, Underground, Plastic
11. 441 Irrigation System, Microirrigation
12. 449 Irrigation Water Management
13. 466 Land Smoothing
14. 472 Use Exclusion
15. 484 Mulching
16. 560 Access Road
17. 580 Streambank & Shoreline Protection
18. 590 Nutrient Management
19. 595 Pest Management
20. 600 Terrace
21. 630 Vertical Drain
22. 645 Wildlife Upland Habitat Management

13	SYSTEM NARRATIVE	*describe how the practices work together as a system*

Orchard crops include macadamia nuts, coffee, papaya, and various tropical fruits. Outlets are often inadequate and care should be exercised when structural measures are to be considered. Measures will be taken to prevent the destruction of cultural resources and threatened & endangered species habitat.

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14	RESOURCE CONCERNS	MAGNITUDE/EFFECTS	IMPACTS
	1. Soil / Erosion / Ephemeral Gully	1. Gullies and washouts will occur less frequently with installation of proposed treatment.	1. Clean-up cost after rainfall events will be reduced. Crop losses from washouts will be minimized.
	2. Soil / Erosion / Classic Gully	2. Formation of new gullies will be minimized. Existing gullies will be reshaped and treated.	2. Runoff water will flow at a safe and non-erosive rate. Crop loss from gullying is reduced.
	3. Soil / Erosion / Streambank Erosion	3. Streams will carry runoff water without eroding.	3. Farmable area is not reduced by sloughing of streambanks
	4. Soil / Condition / Tilth, Crusting, Infiltration, Organic Matter	4. Proposed management techniques will enhance soil tilth.	4. General soil health will improve condition for optimum crop growth.
	5. Water / Quantity / Runoff/Flooding	5. System installation will stabilize soils with vegetative cover and proper land shaping.	5. Cost of crop and property damage will be reduced after landscape is stabilized.
	6. Water / Quantity / Soil Saturation	6. Excess water is managed to allow accessibility to crops.	6. Operation costs are minimized and selected crops can be grown.
	7. Water / Quantity / Inadequate Outlets	7. Water courses and outlets will be designed to safely carry runoff water.	7. Onsite and offsite damages from runoff are minimized.
	8. Water / Quantity / Irrigation Water Management	8. Designed irrigation system will efficiently distribute water to crops.	8. Water is conserved and crop production will increase.
	9. Water / Quality / Pesticides in Groundwater	9. A pest management plan will assess the risk of further groundwater contamination.	9. Pesticides will be properly managed and used to minimize groundwater contamination.
	10. Water / Quality / Nutrients & Organics in Groundwater	10. Risk of contamination for nutrients will be evaluated.	10. Nutrients will be properly applied according to soil tests.
	11. Water / Quality / Nutrients & Organics in Surface water	11. Potential for contamination from nutrients will be evaluated.	11. Nutrients will be properly applied according to soil and plant tissue analysis.
	12. Water / Quality / Suspended Sediment & Turbidity in Surface Water	12. Amount of sediment in runoff water is minimized.	12. Effects from suspended sediment and turbidity to aquatic habitat, recreation waters, and other downstream waterbodies are minimized.
	13. Plant / Condition / Plant Productivity	13. NOT APPLICABLE.	13. NOT APPLICABLE.

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	RESOURCE CONCERNS	MAGNITUDE / EFFECTS	IMPACTS
	14. Plant / Management / Threatened & Endangered Species	14. Area around the threatened or endangered plants will be excluded from operations.	14. Threatened or endangered plants will have a suitable growth environment undisturbed by agricultural activities.
	15. Animal / Habitat / Domestic Animal Water Requirements	15. NOT APPLICABLE	15. NOT APPLICABLE
	16. Animal / Habitat / Threatened & Endangered Species	16. Food, water, and shelter of threatened or endangered species will not be affected by agricultural activities.	16. Threatened or endangered animals will have a suitable habitat for growth and reproduction.

CRA	SYSTEM TEMPLATE LABEL		
15	* QUALITY CRITERIA DOCUMENTATION *list resource concerns then indicate yes/no (X)*		
	1. Ephemeral Gully	☒ YES	☐ NO
	2. Classic Gully	☒ YES	☐ NO
	3. Streambank Erosion	☒ YES	☐ NO
	4. Tilth, Crusting, Infiltration, Organic Matter	☒ YES	☐ NO
	5. Runoff/Flooding	☒ YES	☐ NO
	6. Soil Saturation	☒ YES	☐ NO
	7. Inadequate Outlets	☒ YES	☐ NO
	8. Irrigation Water Management	☒ YES	☐ NO
	9. Pesticides in Groundwater	☒ YES	☐ NO
	10. Nutrients & Organics in Groundwater	☒ YES	☐ NO
	11. Nutrients & Organics in Surface Water	☒ YES	☐ NO
	12. Suspended Sediment & Turbidity in Surface Water	☒ YES	☐ NO
	13. Plant Productivity	☒ YES	☐ NO
	14. Threatened & Endangered Plants	☒ YES	☐ NO
	15. Domestic Animal Water Requirements	☐ YES	☐ NO
	16. Threatened & Endangered Species (Animal)	☒ YES	☐ NO

* Provides an indication that the resource quality criteria will be met.